

SEQUENCE LISTING

5 <110> Martelange, Valérie
 De Smet, Charles
 Boon-Falleur, Thierry

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atg aat acc agg gat cag tat gct acc atc act cac aat gtc tgt gaa 166
35 Met Asn Thr Arg Asp Gln Tyr Ala Thr His Asn Val Cys Glu
1 5 10 15

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Glu Arg Val Val Asn Asn Gln Pro Leu Pro Ser Asn Ala Leu Ser Thr
40 20 25 30

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gtt cta cca ggg ctt gct tat ttg gca aca gct gat atg cca gcc atg 262
Val Leu Pro Gly Leu Ala Tyr Leu Ala Thr Ala Asp Met Pro Ala Met
35 40 45

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agt acc agg gat cag cat gct acc atc att cac aat ctg cgt gaa gag 310
Ser Thr Arg Asp Gln His Ala Thr Ile Ile His Asn Leu Arg Glu Glu
50 55 60

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aag aaa gat aac agc caa cca acc cct gat aac gtc ttg tca gct gtt 358
Lys Lys Asp Asn Ser Gln Pro Thr Pro Asp Asn Val Leu Ser Ala Val
65 70 75 80

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5	acc agg gat cag tat gct acc gtc aat cac cat gtc cat gaa gca agg Thr Arg Asp Gln Tyr Ala Thr Val Asn His His Val His Glu Ala Arg 100 105 110	454
10	atg gaa aat ggc caa cga aaa cag gat aac gtc ttg tca aat gtt cta Met Glu Asn Gly Gln Arg Lys Gln Asp Asn Val Leu Ser Asn Val Leu 115 120 125	502
15	tcc ggg ctt att aat atg gca gga gct agt att cca gca atg agt tcc Ser Gly Leu Ile Asn Met Ala Gly Ala Ser Ile Pro Ala Met Ser Ser 130 135 140	550
20	agg gat ctg tat gct acc att act cac agt gtt cgt gaa gag aag atg Arg Asp Leu Tyr Ala Thr Ile Thr His Ser Val Arg Glu Glu Lys Met 145 150 155 160	598
25	gaa agt ggc aaa ccc cag act gat aag gtc ata tca aat gat gca cca Glu Ser Gly Lys Pro Gln Thr Asp Lys Val Ile Ser Asn Asp Ala Pro 165 170 175	646
30	cag ctt ggt cat atg gct gca ggt ggt att cca tcc atg agt acc aag Gln Leu Gly His Met Ala Ala Gly Gly Ile Pro Ser Met Ser Thr Lys 180 185 190	694
35	gat ctg tat gct acc gtc act caa aat gtc cat gaa gag agg atg gaa Asp Leu Tyr Ala Thr Val Thr Gln Asn Val His Glu Glu Arg Met Glu 195 200 205	742
40	aat aac caa cca caa cct agt tat gac ttg tca act gtt cta cca gga Asn Asn Gln Pro Gln Pro Ser Tyr Asp Leu Ser Thr Val Leu Pro Gly 210 215 220	790
45	ctt act tat ttg aca gta gct ggt att ccg gcc atg agt acc agg gat Leu Thr Tyr Leu Thr Val Ala Gly Ile Pro Ala Met Ser Thr Arg Asp 225 230 235 240	838
50	cag tat gct acc gtc act cac aat gtc cat gaa gag aag att aaa aat Gln Tyr Ala Thr Val Thr His Asn Val His Glu Glu Lys Ile Lys Asn 245 250 255	886
	ggc caa gca gca tcc gat aat gtc ttc tcg act gtt cca cca gca ttt Gly Gln Ala Ala Ser Asp Asn Val Phe Ser Thr Val Pro Pro Ala Phe 260 265 270	934
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10	caa cca gca cct ggt aac atc ttg tca act gct cct cca tgg ctt cgt Gln Pro Ala Pro Gly Asn Ile Leu Ser Thr Ala Pro Pro Trp Leu Arg 305 310 315 320	1078
15	cat atg gca gca gct gga att tca tcc acg att acc agg gat ctg tat His Met Ala Ala Gly Ile Ser Ser Thr Ile Thr Arg Asp Leu Tyr 325 330 335	1126
20	gtc acc gcc act cac agt gtc cat gag gag aag atg aca aat ggc caa Val Thr Ala Thr His Ser Val His Glu Glu Lys Met Thr Asn Gly Gln 340 345 350	1174
25	cag gca cct gat aac tcc ttg tca acg gtt cca cct ggt tgt att aat Gln Ala Pro Asp Asn Ser Leu Ser Thr Val Pro Pro Gly Cys Ile Asn 355 360 365	1222
30	ctg tca gga gct ggt att tca tgc aga agt acc agg gat ctg tat gct Leu Ser Gly Ala Gly Ile Ser Cys Arg Ser Thr Arg Asp Leu Tyr Ala 370 375 380	1270
35	act gtc att cac gat atc cag gag gag atg gaa aat gat caa acc Thr Val Ile His Asp Ile Gln Glu Glu Met Glu Asn Asp Gln Thr 385 390 395 400	1318
40	cct cct gat ggc ttc ctg tca aat tct gat tca cca gag ctg ata aat Pro Pro Asp Gly Phe Leu Ser Asn Ser Asp Ser Pro Glu Leu Ile Asn 405 410 415	1366
45	atg aca gga cat tgt atg cca ccc aat gca ttg gat tct ttc tct cac Met Thr Gly His Cys Met Pro Pro Asn Ala Leu Asp Ser Phe Ser His 420 425 430	1414
50	gac ttc aca agt ctc agc aaa gat gag ctg ctt tac aaa cct gat agt Asp Phe Thr Ser Leu Ser Lys Asp Glu Leu Leu Tyr Lys Pro Asp Ser 435 440 445	1462
55	aat gaa ttt gcg gta ggc acc aaa aac tac agt gtc tct gca ggt gac Asn Glu Phe Ala Val Gly Thr Lys Asn Tyr Ser Val Ser Ala Gly Asp 450 455 460	1510
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caa tta atg aaa gaa gtt cga agg ttt ggg caa aat tat gaa aga att 1654
Gln Leu Met Lys Glu Val Arg Arg Phe Gly Gln Asn Tyr Glu Arg Ile
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5 ttc att ttg ctt gaa gag gta caa gga tct atg aaa gtc aag aga caa 1702
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10 ttt gtt gaa ttt acc atc aag gaa gca gca agg ttt aaa aaa gtt gtc 1750
Phe Val Glu Phe Thr Ile Lys Glu Ala Ala Arg Phe Lys Lys Val Val
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15 tta att cag caa ctc gag aag gcg ctt aaa gaa ata gat tcc cac tgc 1798
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545 550 555 560

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565 570

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Ser Thr Arg Asp Gln His Ala Thr Ile Ile His Asn Leu Arg Glu Glu
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40 Lys Lys Asp Asn Ser Gln Pro Thr Pro Asp Asn Val Leu Ser Ala Val
65 70 75 80
Thr Pro Glu Leu Ile Asn Leu Ala Gly Ala Gly Ile Pro Pro Met Ser
85 90 95
45 Thr Arg Asp Gln Tyr Ala Thr Val Asn His His Val His Glu Ala Arg
100 105 110
Met Glu Asn Gly Gln Arg Lys Gln Asp Asn Val Leu Ser Asn Val Leu
115 120 125
Ser Gly Leu Ile Asn Met Ala Gly Ala Ser Ile Pro Ala Met Ser Ser
130 135 140
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Glu Ser Gly Lys Pro Gln Thr Asp Lys Val Ile Ser Asn Asp Ala Pro

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	Asn Asn Gln Pro Gln Pro Ser Tyr Asp Leu Ser Thr Val Leu Pro Gly		
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	Leu Thr Tyr Leu Thr Val Ala Gly Ile Pro Ala Met Ser Thr Arg Asp		
	225	230	235
10	Gln Tyr Ala Thr Val Thr His Asn Val His Glu Glu Lys Ile Lys Asn		
	245	250	255
	Gly Gln Ala Ala Ser Asp Asn Val Phe Ser Thr Val Pro Pro Ala Phe		
	260	265	270
15	Ile Asn Met Ala Ala Thr Gly Val Ser Ser Met Ser Thr Arg Asp Gln		
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	Tyr Ala Ala Val Thr His Asn Ile Arg Glu Glu Lys Ile Asn Asn Ser		
	290	295	300
20	Gln Pro Ala Pro Gly Asn Ile Leu Ser Thr Ala Pro Pro Trp Leu Arg		
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	His Met Ala Ala Ala Gly Ile Ser Ser Thr Ile Thr Arg Asp Leu Tyr		
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	Val Thr Ala Thr His Ser Val His Glu Glu Lys Met Thr Asn Gly Gln		
	340	345	350
25	Gln Ala Pro Asp Asn Ser Leu Ser Thr Val Pro Pro Gly Cys Ile Asn		
	355	360	365
	Leu Ser Gly Ala Gly Ile Ser Cys Arg Ser Thr Arg Asp Leu Tyr Ala		
	370	375	380
	Thr Val Ile His Asp Ile Gln Glu Glu Met Glu Asn Asp Gln Thr		
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30	Pro Pro Asp Gly Phe Leu Ser Asn Ser Asp Ser Pro Glu Leu Ile Asn		
	405	410	415
	Met Thr Gly His Cys Met Pro Pro Asn Ala Leu Asp Ser Phe Ser His		
	420	425	430
35	Asp Phe Thr Ser Leu Ser Lys Asp Glu Leu Leu Tyr Lys Pro Asp Ser		
	435	440	445
	Asn Glu Phe Ala Val Gly Thr Lys Asn Tyr Ser Val Ser Ala Gly Asp		
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	Pro Pro Val Thr Val Met Ser Ser Val Glu Thr Val Pro Asn Thr Pro		
	465	470	475
40	Gln Ile Ser Pro Ala Met Ala Lys Lys Ile Asn Asp Asp Ile Lys Tyr		
	485	490	495
	Gln Leu Met Lys Glu Val Arg Arg Phe Gly Gln Asn Tyr Glu Arg Ile		
	500	505	510
	Phe Ile Leu Leu Glu Val Gln Gly Ser Met Lys Val Lys Arg Gln		
45	515	520	525
	Phe Val Glu Phe Thr Ile Lys Glu Ala Ala Arg Phe Lys Lys Val Val		
	530	535	540
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45

cgg gcc acc aag ctg tgg aat gaa gtt acc aca tct ttt cga gca gga 159
Arg Ala Thr Lys Leu Trp Asn Glu Val Thr Ser Phe Arg Ala Gly

15

20

25

50

atg cct cta aga aaa cac aga caa cac ttt aaa aaa tat ggc aat tgt 207
Met Pro Leu Arg Lys His Arg Gln His Phe Lys Lys Tyr Gly Asn Cys

30

35

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Phe Thr Ala Gly Glu Ala Val Asp Trp Leu Tyr Asp Leu Leu Arg Asn

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10	ttg agg aaa ttt ctt aag aat cat gta att gaa gat atc aaa ggg agg Leu Arg Lys Phe Leu Lys Asn His Val Ile Glu Asp Ile Lys Gly Arg 80 85 90			351
15	tgg gga tca gaa aat gtt gat gat aac aac cag ctc ttc aga ttt cct Trp Gly Ser Glu Asn Val Asp Asp Asn Asn Gln Leu Phe Arg Phe Pro 95 100 105			399
20	gca act tcg cca ctt aaa act cta cca cga agg tat cca gaa ttg aga Ala Thr Ser Pro Leu Lys Thr Leu Pro Arg Arg Tyr Pro Glu Leu Arg 110 115 120			447
25	aaa aac aac ata gag aac ttt tcc aaa gat aaa gat agc att ttt aaa Lys Asn Asn Ile Glu Asn Phe Ser Lys Asp Lys Asp Ser Ile Phe Lys 125 130 135			495
30	tta cga aac tta tct cgt aga act cct aaa agg cat gga tta cat tta Leu Arg Asn Leu Ser Arg Arg Thr Pro Lys Arg His Gly Leu His Leu 140 145 150 155			543
35	tct cag gaa aat ggc gag aaa ata aag cat gaa ata atc aat gaa gat Ser Gln Glu Asn Gly Glu Lys Ile Lys His Glu Ile Ile Asn Glu Asp 160 165 170			591
40	caa gaa aat gca att gat aat aga gaa cta agc cag gaa gat gtt gaa Gln Glu Asn Ala Ile Asp Asn Arg Glu Leu Ser Gln Glu Asp Val Glu 175 180 185			639
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50	gtg cca tcc cta gaa gaa gtc ata aat cca aaa caa gta att ccc caa Val Pro Ser Leu Glu Val Ile Asn Pro Lys Gln Val Ile Pro Gln 205 210 215			735
55	tat ata atg tac aac atg gcc aat aca agt aaa cgt gga gta gtt ata Tyr Ile Met Tyr Asn Met Ala Asn Thr Ser Lys Arg Gly Val Val Ile 220 225 230 235			783
60	cta caa aac aaa tca gat gac ctc cct cac tgg gta tta tct gcc atg Leu Gln Asn Lys Ser Asp Asp Leu Pro His Trp Val Leu Ser Ala Met 240 245 250			831
65	aag tgc cta gca aat tgg cca aga agc aat gat atg aat aat cca act Lys Cys Leu Ala Asn Trp Pro Arg Ser Asn Asp Met Asn Asn Pro Thr			879

	255	260	265		
5	tat gtt gga ttt gaa cga gat gta ttc aga aca atc gca gat tat ttt Tyr Val Gly Phe Glu Arg Asp Val Phe Arg Thr Ile Ala Asp Tyr Phe 270	275	280	927	
10	cta gat ctc cct gaa cct cta ctt act ttt gaa tat tac gaa tta ttt Leu Asp Leu Pro Glu Pro Leu Leu Thr Phe Glu Tyr Tyr Glu Leu Phe 285	290	295	975	
15	gta aac att ttg ggc ttg ctg caa cct cat tta gag agg gtt gcc atc Val Asn Ile Leu Gly Leu Leu Gln Pro His Leu Glu Arg Val Ala Ile 300	305	310	315	1023
20	gat gct cta cag tta tgt tgt ttg tta ctt ccc cca cca aat cgt aga Asp Ala Leu Gln Leu Cys Cys Leu Leu Pro Pro Pro Asn Arg Arg 320	325	330	1071	
25	aag ctt caa ctt tta atg cgt atg att tcc cga atg agt caa aat gtt Lys Leu Gln Leu Leu Met Arg Met Ile Ser Arg Met Ser Gln Asn Val 335	340	345	1119	
30	gat atg ccc aaa ctt cat gat gca atg ggt acg agg tca ctg atg ata Asp Met Pro Lys Leu His Asp Ala Met Gly Thr Arg Ser Leu Met Ile 350	355	360	1167	
35	cat acc ttt tct cga tgt gtg tta tgc tgt gct gaa gaa gtg gat ctt His Thr Phe Ser Arg Cys Val Leu Cys Cys Ala Glu Glu Val Asp Leu 365	370	375	1215	
40	gat gag ctt ctt gct gga aga tta gtt tct ttc tta atg gat cat cat Asp Glu Leu Leu Ala Gly Arg Leu Val Ser Phe Leu Met Asp His His 380	385	390	395	1263
45	cag gaa att ctt caa gta ccc tct tac tta cag act gca gtg gaa aaa Gln Glu Ile Leu Gln Val Pro Ser Tyr Leu Gln Thr Ala Val Glu Lys 400	405	410	1311	
50	cat ctt gac tac tta aaa aag gga cat att gaa aat cct gga gat gga His Leu Asp Tyr Leu Lys Lys Gly His Ile Glu Asn Pro Gly Asp Gly 415	420	425	1359	
	cta ttt gct cct ttg cca act tac tca tac tgt aag cag att agt gct Leu Phe Ala Pro Leu Pro Thr Tyr Ser Tyr Cys Lys Gln Ile Ser Ala 430	435	440	1407	
	cag gag ttt gat gag caa aaa gtt tct acc tct caa gct gca att gca Gln Glu Phe Asp Glu Gln Lys Val Ser Thr Ser Gln Ala Ala Ile Ala 445	450	455	1455	
	gaa ctt tta gaa aat att att aaa aac agg agt tta cct cta aag gag Glu Leu Leu Glu Asn Ile Ile Lys Asn Arg Ser Leu Pro Leu Lys Glu			1503	

Lys Thr Leu Pro Arg Arg Tyr Pro Glu Leu Arg Lys Asn Asn Ile Glu
115 120 125
Asn Phe Ser Lys Asp Lys Asp Ser Ile Phe Lys Leu Arg Asn Leu Ser
130 135 140
5 Arg Arg Thr Pro Lys Arg His Gly Leu His Leu Ser Gln Glu Asn Gly
145 150 155 160
Glu Lys Ile Lys His Glu Ile Ile Asn Glu Asp Gln Glu Asn Ala Ile
165 170 175
Asp Asn Arg Glu Leu Ser Gln Glu Asp Val Glu Glu Val Trp Arg Tyr
10 180 185 190
Val Ile Leu Ile Tyr Leu Gln Thr Ile Leu Gly Val Pro Ser Leu Glu
195 200 205
Glu Val Ile Asn Pro Lys Gln Val Ile Pro Gln Tyr Ile Met Tyr Asn
210 215 220
15 Met Ala Asn Thr Ser Lys Arg Gly Val Val Ile Leu Gln Asn Lys Ser
225 230 235 240
Asp Asp Leu Pro His Trp Val Leu Ser Ala Met Lys Cys Leu Ala Asn
245 250 255
Trp Pro Arg Ser Asn Asp Met Asn Asn Pro Thr Tyr Val Gly Phe Glu
20 260 265 270
Arg Asp Val Phe Arg Thr Ile Ala Asp Tyr Phe Leu Asp Leu Pro Glu
275 280 285
Pro Leu Leu Thr Phe Glu Tyr Tyr Glu Leu Phe Val Asn Ile Leu Gly
290 295 300
Leu Leu Gln Pro His Leu Glu Arg Val Ala Ile Asp Ala Leu Gln Leu
305 310 315 320
Cys Cys Leu Leu Leu Pro Pro Pro Asn Arg Arg Lys Leu Gln Leu Leu
325 330 335
Met Arg Met Ile Ser Arg Met Ser Gln Asn Val Asp Met Pro Lys Leu
340 345 350
His Asp Ala Met Gly Thr Arg Ser Leu Met Ile His Thr Phe Ser Arg
355 360 365
Cys Val Leu Cys Cys Ala Glu Glu Val Asp Leu Asp Glu Leu Leu Ala
370 375 380
35 Gly Arg Leu Val Ser Phe Leu Met Asp His His Gln Glu Ile Leu Gln
385 390 395 400
Val Pro Ser Tyr Leu Gln Thr Ala Val Glu Lys His Leu Asp Tyr Leu
405 410 415
Lys Lys Gly His Ile Glu Asn Pro Gly Asp Gly Leu Phe Ala Pro Leu
40 420 425 430
Pro Thr Tyr Ser Tyr Cys Lys Gln Ile Ser Ala Gln Glu Phe Asp Glu
435 440 445
Gln Lys Val Ser Thr Ser Gln Ala Ala Ile Ala Glu Leu Leu Glu Asn
450 455 460
Ile Ile Lys Asn Arg Ser Leu Pro Leu Lys Glu Lys Arg Lys Lys Leu
465 470 475 480
Lys Gln Phe Gln Lys Glu Tyr Pro Leu Ile Tyr Gln Lys Arg Phe Pro
485 490 495
Thr Thr Glu Ser Glu Ala Ala Leu Phe Gly Asp Lys Pro Thr Ile Lys
50 500 505 510
Gln Pro Met Leu Ile Leu Arg Lys Pro Lys Phe Arg Ser Leu Arg
515 520 525

